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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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SEARETE LLC CLARENCE T. TEGREENE 1756 - 114TH AVE., S.E. SUITE 110 BELLEVUE, WA 98004			EXAMINER SURVILLO, OLEG	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/816,375

Applicant(s)

JUNG ET AL.

Examiner

Oleg Survillo

Art Unit

2142

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date See Continuation Sheet.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :03/31/04, 04/22/04, 04/15/05, 07/24/06, 01/16/07, 03/09/07, 04/02/07, 04/16/07, 05/07/07, 06/08/07, 07/09/07, 07/19/07, 07/25/07.

## DETAILED ACTION

### *Specification*

1. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The abstract of the disclosure is objected to because it does not enable the United States Patent and Trademark Office and the public generally to determine quickly from a cursory inspection the nature and gist of the technical disclosure. Correction is required. See MPEP § 608.01(b).

4. The application contains disclosure entirely outside the bounds of the allowed claims. Applicant is required to modify the brief summary of the invention and restrict the descriptive matter so as to be in harmony with the claims (MPEP § 1302.01). In particular, it appears that only disclosure of section I. MOTE-ASSOCIATED INDEX CREATION (pages 6-11 of the specification) is relevant to the subject matter claimed in claims 1-45. The rest of the specification (pages 12-38) describes the subject matter of the co-pending applications wherein the name of each section in the specification corresponds to the name of each of the co-pending applications. Applicants are reminded that the subject matter of the later sections of the specification (sections II. through V.) is actually included through their incorporation by reference of the related/parent applications, as mentioned in the beginning of the specification (pages 1-4). As a result, providing a detailed description of the subject matter of co-pending applications is redundant and must be removed from the current application.

***Claim Rejections - 35 USC § 101***

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 21-40 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

As to claim 21, index creation agent appears to be a computer program (for the interpretation of means plus function language please refer to ***Claim Rejections - 35 USC § 112*** section of the Office Action). A system comprising a computer program per se is not in one of the statutory categories.

As to claims 22-40, additional means for performing a function do not appear to introduce any tangible elements that would render a system of claim 21 statutory under 35 U.S.C. 101.

***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 21-40 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.

Claims 21, 23-40 incorporate means-plus-function limitations reciting a function to be performed rather than definite structure or materials for performing that function.

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As to claim 21, limitations: "means for determining" and "means for creating" are interpreted to invoke 35 USC 112, sixth paragraph.

The current specification shows that determining at least one of a sensing function or a control function at a mote and creating one or more mote-addressed content indexes in response to said determining is performed by an index creation agent (202) (bottom of page 9, page 10). Therefore, means for determining are interpreted to be an index creation agent (202), and means for creating are also interpreted to be an index creation agent (202).

As a result, claim 21 appears to be a single means claim, i.e., where a means recitation does not appear in combination with another recited element of means, and is, therefore, subject to an undue breadth rejection under 35 U.S.C. 112, first paragraph.

*In re Hyatt, 708 F.2d 712, 714-715, 218 USPQ 195, 197 (Fed. Cir. 1983)*

**MPEP 2164.08(a)**

Claims 22-40 are rejected under 35 U.S.C. 112, first paragraph as being dependent from the claim 21.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 12-13, 32-33, and 41-44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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As to claims 12 and 13 (and corresponding claims 32 and 33), the step of establishing an index-creating agent at the mote in response to said step of determining is ambiguous because the order of steps is unclear. In particular, the preamble of claim 12 states that step of creating is performed after (in response to) step of determining. The body of the claim appears to further limit the step of creating by introducing additional steps (establishing, determining, and associating). However, the step of establishing an index-creating agent at the mote does not appear to be consistent with the specification wherein the specification shows (bottom of page 9 and top of page 10) that "...index creation agent communicates with the device entities to find out what sensing functions are present and/or available at their various respectively associated devices..." It appears from the specification that an index-creating agent is performing the step of determining (recited in claim 1 and preamble of claim 12). Therefore, the step of establishing an index-creating agent at the mote in response to step of determining, as currently claimed, is inconsistent with the specification and is, therefore, ambiguous. Claim 13 incorporates similar inconsistency wherein the step of migrating to the mote is claimed to be performed in response to the step of determining (recited in claim 1 and preamble of claim 13).

If the inventors believe that the index creation agent does not, in fact, perform the step of determining (of claim 1 and preamble of claims 12 and 13), the appropriate citation from the specification must be provided in the response to this Office Action clearly indicating which component of the system of the current invention does perform the recited step.



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As to claim 41, it is ambiguous because it is unclear if at least one mote-appropriate device is a mote or the two devices claimed (mote-appropriate device and a mote) are unrelated to each other.

Claims 42-44 are rejected as being dependent from claim 41.

As to claim 43, it is ambiguous because it is unclear how an index creation agent, which is a software program, comprises a processor, which appears to be a hardware component.

***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1, 7-11, 21, and 27-31 are rejected under 35 U.S.C. 102(a) as being anticipated by "The Design of an Acquisitional Query Processor For Sensor Networks" by Samuel Madden et al.

As to claims 1 and 21, Madden et al. shows  
determining at least one of a sensing function or a control function at a mote  
[sampling a sensor *s* to evaluate any predicate over the attribute *sensors.s* (section 4.2  
Ordering of Sampling And Predicates)]; and

creating one or more mote-addressed content indexes in response to said determining [creating and maintaining a catalog of metadata that describes a particular mote's local attributes, events, and information about the costs of processing and delivering data (section 4.1 Metadata Management, and Table 2, and 3)].

Madden also shows that recited functions are performed by a TinyDB (section 1 Introduction, paragraph 4).

As to claims 7 and 27, Madden shows creating at least one extensible index [a sensors table, which is conceptually unbounded (section 3.1 paragraph 3)].

As to claims 8 and 28, Madden shows creating the at least one extensible index in response to a type of content indexed [creating a sensors table in response to light and temperature readings selected as a type of content requested from sensors (section 3.1 paragraph 3)].

As to claims 9 and 29, Madden shows creating at least one a mote-addressed sensing index [a sensor table of sensors' readings (section 3.1 paragraph 3)].

As to claims 10 and 30, Madden shows creating at least one of a mote-addressed routing/spatial index [a list of neighbors and some routing information about the connectivity of those neighbors to the rest of the network (section 2.2 Communication in Sensor Networks, paragraph 2)].

As to claims 11 and 31, Madden shows inserting at least one device identifier in the one or more mote-addressed content indexes [nodeid that is selected to be reported in the sensors table (section 3.1, see the first query)].

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12. Claims 1, 12, 14, 15, 18-21, 32, 34, 35, 38-40, and 45 are rejected under 35 U.S.C. 102(b) as being anticipated by Mulgund et al. (2002/0161751).

As to claims 1 and 21, Mulgund shows

determining at least one of a sensing function or a control function at a mote [discovering and maintaining the distributed sensor network topology (paragraph [0007]) wherein at least one of a sensing function or a control function is interpreted to be at least one of the data elements outlined in paragraphs 0021 – 0024]; and

creating one or more mote-addressed content indexes in response to said determining [building a database model by updating relational database logical design tables at each step of the discovering step (paragraph 0007)].

Mulgund also shows a sensor network modeling agent (summary of the invention) for performing the recited functions.

As to claims 12 and 32, Mulgund shows

establishing an index-creating agent at the mote [causing the network modeling agent to visit a first sensor node and mark the first node visited (paragraph 0007). Note that terms “node” and “mote” are interpreted to have same meaning of small embedded platform that has one or more sensors (paragraph 0026) and therefore these terms are used here interchangeably];

determining a mote-network address of the mote (paragraphs [0021] and [0028] – [0031]); and

associating at least one of a mote-addressed sensing index, a mote-addressed control index, or a mote-addressed routing/spatial index with the mote-network address of the mote (Fig. 3 and paragraph [0037]).

As to claims 14, 15, 34, and 35, Mulgund shows  
determining a mote-network address of the mote (paragraphs [0021] and [0028] – [0031]);

determining one or more types of control and sensing available from one or more devices of the mote (paragraphs [0021] – [0024]) wherein the following data elements are obtained by interrogating a node (paragraph [0044]); and

associating the one or more types of control or sensing available from one or more devices of the mote with the mote-network address of the mote (Fig. 3 and paragraph [0037]).

As to claims 18-20 and 38-40, the claims will be interpreted broadly since the meaning of the claimed limitations is not understood.

As to claims 18-20 and 38-40, Mulgund shows associating one or more mote-appropriate routing addresses [note addresses (see table 20 of Fig. 3)] with at least one mote-addressed content index (Fig. 3 and Fig. 4, paragraphs [0037]-[0038]) wherein mote-addressed content index could be addressed directly or indirectly depending on the implementation (paragraph [0042]).

As to claim 45, Mulgund shows  
at least one mote-appropriate device comprising a sensing node (Fig. 2 and paragraph [0026]); and

a mote-addressed content index having at least a sensing function of said at least one mote-appropriate device (Fig. 3 paragraph [0037]).

***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 2 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over "The Design of an Acquisitional Query Processor For Sensor Networks" by Samuel Madden et al. in view of Chiloyan et al. (US Patent No.: 7,165,109).

As to claims 2 and 22, Madden shows all the elements except for accessing at least one device entity registry.

Chiloyan shows accessing at least one device entity registry comprising having an operational system accessing device registry to check if the particular peripheral device model is included in the current device registry (col. 1 lines 50-65).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Madden by accessing at least one device entity registry in order to check if the particular device model and necessary information about the device is in the registry (col. 1 lines 58-63 in Chiloyan).

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15. Claims 3-6, and 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over "The Design of an Acquisitional Query Processor For Sensor Networks" by Samuel Madden et al. in view of Godlewski (US Patent No.: 6,421,354).

As to claims 3 and 23, Madden shows communicating with at least one device comprising a sensor to collect its reading data (section 3.1 Basic Language Features) and store it in a sensors table (lines 1-20).

Madden does not expressly shows that communication is established with at least one device-associated entity.

Godlewski shows communicating with at least one device-associated entity comprising a sensor interface (Fig. 1 and Fig. 4) (col. 1 lines 45-55).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Madden by communicating with at least one device-associated entity in order to receive data from a sensor in the appropriate format (col. 1 lines 45-55 in Godlewski).

As to claims 4 and 24, Madden in view of Godlewski shows communicating with at least a light device entity (col. 5 lines 58-67 and col. 6 lines 1-10).

As to claims 5 and 25, Madden shows accessing at least one device identifier of a mote-addressed content index (section 3.1 Basic Language Features lines 14-16).

As to claims 6 and 26, Madden in view of Godlewski shows communicating with at least one device entity using a common application protocol (Fig. 6 col. 13 lines 7-42 in Godlewski).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Madden by communicating with at least one device entity using a common application protocol in order to transmit data from a sensor to the communicator using sensor interface software (col. 13 lines 35-42 in Godlewski).

16. Claims 13, 33, and 41-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulgund et al. (2002/0161751) in view of "The Design of an Acquisitional Query Processor For Sensor Networks" by Samuel Madden et al.

As to claims 13 and 33, Mulgund shows  
migrating to the mote comprising visiting a first sensor node (paragraph [0007] lines 18-19); and

querying at least one device entity with the index creation agent comprising interrogating a node with a network modeling agent (paragraph [0044]).

Mulgund shows that each node contains some local memory or other knowledge base for recording sensor output data, which can be retrieved by interrogating the node (paragraph [0030]), which suggests that there exists some management module that collects data from sensors and stores it in the knowledge base, however, the management module per se is not explicitly shown.

Madden shows installing an index creation agent at the mote comprising a TinyDB, which is a distributed query processor that runs on each of the nodes in a sensor network (section 1 Introduction, paragraph 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by installing an index creation agent at the mote in order to select, join, project, and aggregate data from the sensors (section 1 Introduction, paragraph 4 in Madden).

As to claim 41, Mulgund shows

at least one mote-appropriate device comprising a sensing node (Fig. 2 and paragraph [0026]); and

at least one index creation agent comprising a sensor network modeling agent, said at least one index creation agent configured to create at least one of a sensing index, a control index, or a routing/spatial index (Fig. 3 and paragraph [0037]).

Mulgund also shows that each node contains some local memory or other knowledge base for recording sensor output data, which can be retrieved by interrogating the node (paragraph [0030]), which suggests that there exists some agent resident in a mote that collects data from sensors and stores it in the local knowledge base, however, the local agent per se is not explicitly shown.

Madden shows an index creation agent resident in a mote comprising a TinyDB, which is a distributed query processor that runs on each of the nodes in a sensor network (section 1 Introduction, paragraph 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by having an index creation agent resident in the mote in order to select, join, project, and aggregate data from the sensors (section 1 Introduction, paragraph 4 in Madden).



As to claim 42, Mulgund shows that at least one mote-appropriate device comprises at least a temperature device (paragraph [0026]).

Claim 43 will be examined as best understood.

As to claim 43, Mulgund in view of Madden shows a processor configured to obtain at least a sensing function of the mote (section 2.1 Properties of Sensor Devices, paragraph 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Mulgund by having a processor in order to process sensor data that is being stored in a knowledge base (Fig. 2 in Mulgund).

As to claim 44, Mulgund shows at least one of a processor, a memory, or a communications devices formed from a substrate (paragraph [0026]).

17. Claims 16, 17, 36, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulgund et al. (2002/0161751) in view of Kung et al. (2005/0021724).

As to claims 16 and 36, Mulgund shows  
determining a mote-network address of the mote (paragraphs [0021] and [0028] – [0031]); and  
associating the one or more types of information related to devices of or proximate to the mote with the mote-network address of the mote (Fig. 3 and paragraph [0037]).

Mulgund does not show determining one or more types of spatial information related to devices of or proximate to the mote.

Kung shows determining one or more types of spatial information related to devices of or proximate to the mote (paragraph [0036]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by determining one or more types of spatial information related to devices of or proximate to the mote in order to determine a global position of a mote that would identify a location of the mote in space (paragraph [0010] in Kung).

As to claims 17 and 37, Mulgund shows  
determining a mote-network address of the mote (paragraphs [0021] and [0028] – [0031]); and

associating the one or more types of information of other motes proximate to the mote with the mote-network address of the mote (Fig. 3 and paragraph [0037]).

Mulgund does not show determining one or more types of absolute spatial information of other motes proximate to the mote.

Kung shows determining one or more types of absolute spatial information of other motes proximate to the mote (paragraph [0036]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by determining one or more types of absolute spatial information of other motes proximate to the mote in order to determine

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a global position of a mote that would identify a location of the mote in space (paragraph [0010] in Kung).

**Conclusion**


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Oleg Survillo whose telephone number is 571-272-9691. The examiner can normally be reached on M-Th 7:30am - 5:00pm; F 7:30am - 4:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Caldwell can be reached on 571-272-3868. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Examiner: Oleg Survillo

Phone: 571-272-9691

  
ANDREW CALDWELL  
SUPERVISORY PATENT EXAMINER